

REMARKS

No claims have been amended and new claims 15-19 have been added. The new claims find support at, e.g., the figures, the claims, pages 12-14 of the substitute specification, and elsewhere in the application as filed, whereby no new matter is added. No claims have been cancelled, whereby claims 1-19 are pending and presented for review. Favorable reconsideration and allowance are requested in light of the remarks which follow.

1. Prior Art Rejections

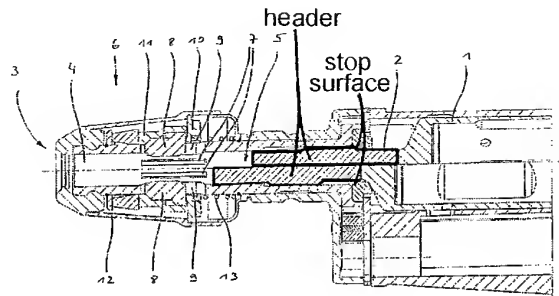
The Examiner rejects claims 1-14 under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 5,971,403 to Yahagi et al. (herein “the Yahagi patent”) in view of U.S. Patent No. 6,510,904 to Tyrrell (herein “the Tyrrell patent”).

Applicants respectfully traverse these rejections and assert that the Examiner misinterpreted and misapplied the Yahagi and Tyrrell patents, and the combination of the Yahagi and Tyrrell patents do not and cannot disclose or suggest each and every element of novel and non-obvious claim 1. Therefore, reconsideration is in order and is respectfully requested.

a. Recapitulation of the Invention*

The invention relates to a drilling and/or percussive hammer having a tool holder for holding a tool and transferring a torque to the tool. The tool holder or receptacle has a stationary stop surface and an impact opening that are spatially arranged with respect to each other to enhance force transmission between an impact piston, or other percussive hammer components, and the tool. Prior art percussive hammer tool receptacles incorporate an intermediate structure, typically referred to as a header or striker (see, e.g., reference character 2 in FIG. 1 of the present application), which is axially upstream of the tool for (i) transmitting impact energy from an impact piston, and (ii) axially positioning the insertion end of the tool.

* This Section 1(a) is presented for background purposes so the Examiner may understand the state of the art and, in general terms, the Applicants' contribution thereto. It is not intended to constitute a specific traversal of any particular rejection. That task instead is performed in Section 1(b) below.

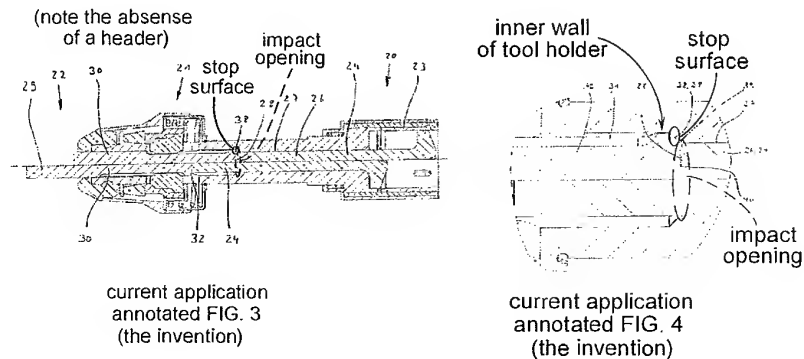


current application
annotated FIG. 1
(prior art)

In other words, such prior art headers or strikers transfer impact forces from an impact piston, or other percussion mechanism, to the tool and also axially limit an amount that a tool can travel into a device. The typical prior art header (or striker) thus limits axial travel of the tool because its own axial travel is limited by, e.g., a mechanical stop located somewhere within the device, typically of the header or at an end that is furthest from the tool. Accordingly, in such known configurations, any stop structure or surface must be provided at a location within a percussive hammer that is axially spaced from a location where the tool is impacted, e.g., the stop surface is spaced from an impact opening. The stop structure and impact (opening) locations are typically spaced from each other by a distance that corresponds to the header's length dimension. Length, width, and/or other related space requirements of headers influence and can greatly limit design possibilities for the impact pistons that cooperate with the headers, which can make achieving relatively greater impact energies by way of impact piston design difficult.

In the present invention, a tool receptacle includes *a stop surface provided on an inner wall of the tool holder*, such that *the stop surface is located in the area of the impact opening*. This is done by providing a stop surface that projects radially inwardly from an inner circumferential surface of the tool holder sidewall, transitioning between the tool holder sidewall and an impact piston guide. In other words, the stop surface and leading end of the impact piston guide can both be adjacent the area in which the impact piston impacts the tool. Such spatial relationship between the stop surface and impact opening allow the tool's axial travel to be

axially limited at its impact position, remarkably mitigating feedback effects that are known to influence percussive systems.

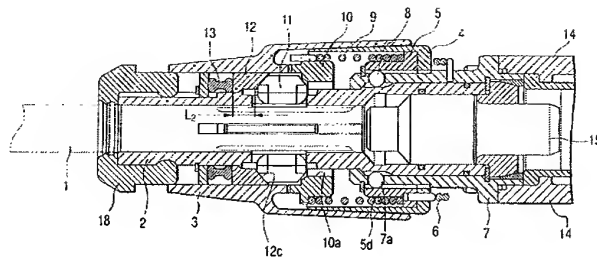


b. Traversal of Rejections

Applicants respectfully traverse the above-referenced rejections and assert that the combination of the Yahagi and Tyrrell patents do not and cannot render obvious a device for a drilling and/or percussive hammer having a tool receptacle that includes ***a stop surface provided on an inner wall of the tool holder, in the area of the impact opening.***

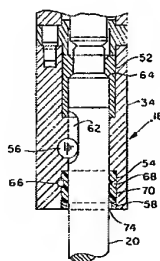
Before discussing the specifics of the rejection, it should be noted that the devices and intended purposes of the cited Yahagi and Tyrrell patents differ substantially from those of Applicants' invention. The cited references are discussed generally below.

The Yahagi patent discloses a tool bit holder having a tool release mechanism that is configured to allegedly resolve various issues relating to non-desired tool removal. The disclosed tool bit holder requires multiple manipulation steps to release a tool therefrom for reducing instances of non-desired tool removal during use. To remove a tool from the holder, a first grip portion 3 must be axially slid toward or over a second grip portion 4, and then the first grip portion 3 is rotated with respect to the second grip portion 4, allowing locking members 11 to radially withdraw from their engagement with grooves 16 in the tool (see, e.g., FIG.3). The rest of the percussion tool holder or tool receptacle is merely conventional.



the Yahagi patent
 FIG. 3

The Tyrrell patent discloses a tool bit holder having a bushing assembly that is configured to allegedly resolve various issues relating to cost and downtime associated with replacing conventional bushings (Column 1 Line 44 – Column 2, Line 22). The Tyrrell patent discloses an impact hammer 10 with a polymeric bushing 70 and a metallic ring 58 that protects the polymeric bushing 70 from impacts during use. A metallic bushing 52 guides a larger diameter portion and a smaller diameter portion of the tool end. The smaller diameter portion of the tool end extends beyond the bushing and into an impact area.

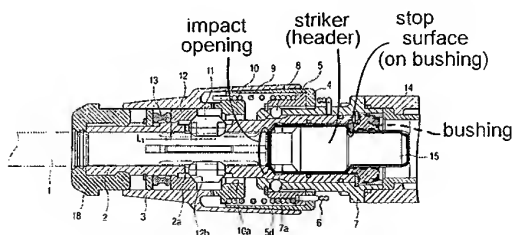


the Tyrrell patent
 FIG. 2

Turning now to the substance of the rejections, the combination of the Yahagi and Tyrrell patents does not and cannot render obvious *a stop surface provided on an inner wall of the tool holder*, such that *the stop surface is located in the area of the impact opening*. To the contrary, Yahagi and Tyrrell patents teach away from the same by, instead, disclosing that *stop surfaces should be spaced from impact openings* at which locations tool ends are struck within a device.

Independent claim 1 is directed toward a device for a drilling and/or percussive hammer that has a tool receptacle for holding and a transmitting a torque to a tool. The tool receptacle includes an essentially hollow cylindrical recess, forming the tool holder. One end of the tool holder includes an introduction opening through which an insertion end of the tool can be introduced. The other, opposite end of the tool holder has an impact opening through which an impact action can be applied to the insertion end of the tool. At least one web-shaped rotational driver is formed on an inner side of the tool holder and at least one locking element is provided. In a locked state, the locking element is held in a predetermined radial position, and, in an unlocked state, the locking element is capable of movement at least radially out of the predetermined radial position. Furthermore, *a stop surface acting in the axial direction of the tool holder is provided on an inner wall of the tool holder, in the area of the impact opening.*

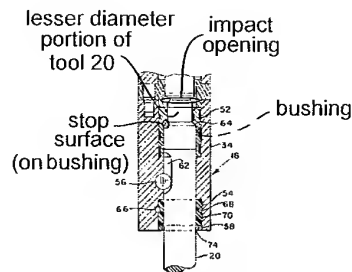
The Yahagi patent discloses a stop that is spaced from and located upstream of an impact opening. In other words, the tool 1 is impacted by a striker (header) 15 in an opening at a first location. A stop is provided at a second location for limiting axial travel of the striker (header) 15. The first and second locations are not in the same area, but rather the impact opening and stop are spaced from each other along a major portion of the length of the striker (header) 15.



the Yahagi patent
FIG. 2 annotated

Stated another way, the Yahagi patent discloses a **stop surface on a separate and distinct bushing** that is pressed fitted into the casing 14. The stop surface therefore is NOT provided on an inner wall of the tool holder. It also discloses a **stop surface that is spaced from the area of the impact opening** (where the tool 1 is impacted by the striker or header 15). The stop surface therefore is NOT located in the area of the impact opening.

The Tyrrell patent discloses a stop that is spaced from and located downstream of an impact opening. In other words, the tool 20 is impacted by a piston 42 in an opening at a first location. A stop is provided at a second location for limiting axial travel of the tool 20. The first and second locations are not in the same area, but rather the impact opening and stop are spaced by a distance that corresponds to a length of a lesser diameter portion of an upper end of the tool 20.



the Tyrrell patent
FIG. 2 annotated

Stated another way, the Tyrrell patent discloses a **stop surface on a separate and distinct bushing** that is pressed fitted into tool holder 34. The stop surface therefore is NOT provided on an inner wall of the tool holder. It also discloses a **stop surface that is spaced from the area of the impact opening** (where the tool 20 is impacted by the piston 42 – see FIG. 1). The stop surface therefore is NOT located in the area of the impact opening.

Accordingly, it is believed that independent claim 1 is allowable over the cited prior art.

Nor do the Yahagi and Tyrrell patents, or either one individually, disclose or render obvious each and every limitation of claims 2-14, whereby these claims are allowable as depending from allowable claim 1, directly or indirectly, as well as on their own merits.

For instance, claim 12 further recites that a diameter of the shaft of the impact piston, or of an impact element that transmits the impact energy of the impact piston to the insertion end, is smaller than the inner diameter of the introductory beveling, having the shape of a truncated cone, of the insertion end, which is not taught or suggested by any of the cited references.

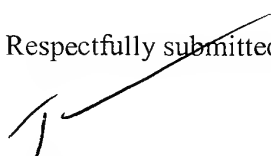
New Claims and Conclusions

New claims 15-19 are directed generally toward the subject matter of claim 1, whereby they are believed allowable for at least the reasons stated above. Claims 15-19 also recite the

invention with even more specificity. For example, independent claims 15 and 18 recite that, in operation, contact between a tool end surface and an impact piston occurs adjacent the stop surface.

Applicants assert that claims 1-19 are in compliance with 35 U.S.C. §§ 102, 103, and 112, and each defines patentable subject matter. A Notice of Allowance is therefore respectfully requested. No fee is believed due at this time. Nevertheless, should the Examiner consider any fees to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment, to Deposit Account No. 50-1170.

Respectfully submitted,



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Dated: January 12, 2009

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